

REMARKS

An excess claim fee payment letter is submitted herewith for two (2) excess independent claims.

Claims 1-20 are all the claims presently pending in the application. Claims 1, 3, 5 and 7-10 have been amended to more particularly define the invention. Claims 14-20 have been added to assure Applicant the degree of protection to which his invention entitles him.

It is noted that the claim amendments herein or later are not made to distinguish the invention over the prior art or narrow the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein or later should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicant gratefully acknowledges the Examiner's indication that claims 3-6 are allowable and that claim 10 would be allowable if rewritten in independent form. Accordingly, Applicant has amended claim 10 to include all the limitations of the intervening claims. Notwithstanding, Applicant respectfully submits that all of the claims presently pending are allowable.

With respect to the prior art rejections, claims 1 and 2 stand rejected under 35 U.S.C. §102(e) as being anticipated by Shiroki et al. (U.S. Patent No. 6,583,769). Claims 7-8 and 11-12 stand rejected under 35 U.S.C. §102(e) as being anticipated by Park (U.S. Patent No. 6,683,573). Claims 1, 9 and 13 stand rejected under 35 U.S.C. §102(e) as being anticipated by Hilgers (U.S. Patent No. 6,680,700).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

An exemplary aspect of the claimed invention, as recited in claim 1, is directed to a chip antenna including a base member comprising at least one of a dielectric material and a magnetic material and including a stacked structure including a plurality of stacked layers, a plurality of pattern antennas formed on the plurality of stacked layers and which have predetermined patterns, respectively, and of which at least parts of the predetermined patterns are not overlapping with each other in a stacked direction of the plurality of stacked layers, and a feeding terminal which is formed on a surface of said base member and which is connected to each of the plurality of stacked layers.

Another aspect of the present invention, as recited in claim 7, provides a chip antenna including a stacked base member comprising at least one of a dielectric material and a magnetic material and a stacked structure including a plurality of layers, a pattern antenna which is formed on at least one of the plurality of layers and which includes a first area having a rectangular shape and a second area elongating continuously from the first area, a slit dividing the first and the second areas of the pattern antenna, the slit elongating straight in a longitudinal direction of the stacked base member, and a feeding terminal which is formed on a surface of the stacked base member and which is connected to the pattern antenna.

A further aspect of the invention, as recited in new independent claim 16, provides a chip antenna including a base member comprising at least one of a dielectric material and a magnetic material, a pattern antenna formed on the base member, a fixed terminal which is formed on a surface of the base member and which is connected to the pattern antenna, and a fixing portion comprising a conductor and which is formed on a mounting substrate and

which is connected to the fixed terminal and thereby fixes the base member on the mounting substrate.

A chip antenna incorporating such features is not taught or suggested by any of the cited references, either alone or in combination.

II. THE PRIOR ART REFERENCES

A. The Shiroki et al. Reference

The Examiner alleges that the invention of claims 1 and 2 are anticipated by Shiroki et al. However, Applicant respectfully submits that the reference does not teach or suggest each and every element of the claimed invention.

Shiroki et al. discloses a chip antenna capable of reducing the spiral pitch of an antenna line to be smaller than that of a conventional one. (Shiroki et al. at Abstract)

However, Shiroki et al. does not teach or suggest a feeding terminal which is formed on a surface of the base member and which is connected to each of the plurality of stacked layers, as recited in claims 1 and 2.

Rather, Shiroki et al. discloses that a pair of terminals 21 and 22 are respectively disposed at both ends of the dielectric base body 11. (See Shiroki et al. at Figure 2, and column 3, lines 23-27) More particularly, as shown in Figure 1 of Shiroki et al., the terminals are provided on the lowest dielectric sheet 18 of the base body and connect with two conductor patterns 25a and 25m on that sheet 18.

Shiroki et al. does not teach or suggest that the terminals are connected to any other conductor patterns or any other dielectric sheets. Indeed, in order to provide an electrical

connection with the conductor patterns on the top dielectric sheet 16, Shiroki et al. forms via holes 12a-12l in the intermediary sheet 17 which are filled with conductive paste. (See Shiroki et al. at Figure 1 and column 2, lines 65-67)

The present invention, on the other hand, provides a feeding terminal which is formed on a surface of the base member and which is connected to each of the plurality of stacked layers, as recited in claims 1 and 2. In this manner, the feeding terminal connects with each of the plurality of layers of the base member, and the antennas thereon, by way of the surface of the base member.

Thus, while Shiroki et al. describes a chip antenna composed by connecting the top and the lowest layers of conductor patterns, the present invention, as recited in claims 1 and 2, describes that each layer is connected to the side of the base member. Clearly, the invention of claims 1 and 2 differs in configuration from the Shiroki's invention wherein through holes are used to establish an electrical connection.

Therefore, Applicant submits that there are elements of claims 1 and 2 that are not taught or suggest by Shiroki, et al. Therefore, the Examiner is respectfully requested to withdraw this rejection.

B. The Park Reference

The Examiner alleges that the invention of claims 7, 8, 11 and 12 are anticipated by Park. However, Applicant respectfully submits that the reference does not teach or suggest each and every element of the claimed invention.

Park discloses a multi band chip antenna with dual feeding ports formed on a radiation electrode structure, thereby performing the electromagnetic coupling between the dual feeding ports and being usable at multiple frequency bands. (Park at Abstract)

However, Park does not teach or suggest a stacked base member including a stacked structure including a plurality of layers or a slit dividing the first and the second areas of the pattern antenna elongating straight in a longitudinal direction of the base member, as recited in claims 7, 8, 11 and 12.

Rather, Park discloses a body 51 consisting of a dielectric or magnetic material in the shape of a hexahedron. (See Park at column 5, lines 49-52) In fact, Park makes no reference or suggestion to the body having a stacked structure, as required by claims 7, 8, 11 and 12.

On the other hand, the invention of claims 7, 8, 11 and 12 provides a base member having a stacked structure including a plurality of layers so that the chip antenna can be made small in size with a plain structure. (See Application at page 2, lines 9-12)

Further, Park also discloses that a U-shaped slot may be formed on the radiation patch. (See Park at column 2, lines 19-21) Park does not teach or suggest that the slit elongates straight in a longitudinal direction of the base member, as recited in claims 7, 8, 11 and 12.

By providing a slit which elongates straight in a longitudinal direction of the base member, the invention of claims 7, 8, 11 and 12 provides an arrangement which permits simple variation of the lengths of the first and second areas of the pattern antenna. Since the ratio of the lengths corresponds to the resonant waveforms, different resonant waveforms can be obtained based on the slit. (See Application at page 14, lines 6-24)

Therefore, Applicant submits that there are elements of claims 7, 8, 11 and 12 that are not taught or suggest by Park. Therefore, the Examiner is respectfully requested to withdraw this rejection.

C. The Hilgers Reference

The Examiner alleges that the invention of claims 1, 9 and 13 are anticipated by Hilgers. However, Applicant respectfully submits that the reference does not teach or suggest each and every element of the claimed invention.

Hilgers discloses a miniaturized antenna with at least a ceramic substrate and a metallization, particularly designed for use in the high-frequency and microwave ranges. (Hilgers at Abstract)

However, Hilgers does not teach or suggest a base member including a stacked structure including a plurality of layers, as recited in claim 1, or the stacked base member of claims 9 and 13.

Rather, Hilgers discloses a rectangular block-shaped substrate 10, which may be ceramic. (See Hilgers at column 3, lines 32-34 and column 4, line 27) However, Hilgers makes no reference or suggestion that the substrate may have a stacked structure, as required in claims 1, 9 and 13.

The invention of claims 1, 9, and 13, on the other hand, provides a base member having a stacked structure including a plurality of layers so that the chip antenna can be made small is size with a plain structure. (See Application at page 2, lines 9-12)

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Therefore, Applicant submits that there are elements of the claims 1, 9 and 13 that are not taught or suggest by Hilgers. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

The Examiner has objected to claims 1, 5 and 9 because of informalities. The cited informalities have been corrected by the amendments to the claims.

Pursuant to the Examiner's indication that claim 10 would be allowable if rewritten in independent form, Applicant has accordingly amended independent claim 10 to include the limitations of the intervening claims.

Additionally, Applicant respectfully submits that new independent claim 16 is allowable as it incorporates the subject matter indicated as allowable by the Examiner on page 4, item No. 7 of the Office Action.

In view of the foregoing, Applicant submits that claims 1-20, all the claims presently pending in the application, are patentably distinct over the prior art of record and are allowable, and that the application is in condition for allowance. Such action would be appreciated.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary for allowance in a telephonic or personal interview.

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To the extent necessary, Applicant petitions for an extension of time under 37 CFR


§1.136. The Commissioner is authorized to charge any deficiency in fees, including

• extension of time fees, or to credit any overpayment in fees to Attorney's Deposit Account

• No. 50-0481.

Respectfully Submitted,

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